

### **REMARKS**

This is a full and timely response to the outstanding non-final Office Action mailed October 10, 2008. The Examiner is thanked for the thorough examination of the present application. Upon entry of this response, claims 1-13 are pending in the present application. Applicants respectfully request consideration of the following remarks contained herein. Reconsideration and allowance of the application and presently pending claims are respectfully requested.

#### **I. Response to Claim Objections**

Claims 1-12 are objected to because of various informalities. Specifically, the Office Action indicates that it is unclear whether the amendment ("39.25 +/- 10% kHz") to the claims submitted in the prior response is supported by the originally filed specification. Applicants refer the Examiner to the various tables shown on pages 51-55 of the originally filed specification, which recite "39.25". As indicated above, Applicants have amended the specification to correctly recite "39.25" rather than "3925" as recited in other portions of the specification. As set forth in the cross reference section, the current application claims priority back to U.S. Provisional Application Nos. 60/398,124 and 60/399,135. With reference to pages 56-64 of Provisional Application No. 60/399,135, the frequency "39.25 kHz" (rather than "3925 kHz") is specified. Likewise, in Provisional Application No. 60/398,124 specifies "39.25 kHz" rather than "3925 kHz." (See pages 57-64.) Accordingly, Applicants submit that the amendment specifying "39.25 kHz" is fully supported by the specification.

## **II. Response to Claim Rejections Under 35 U.S.C. § 102**

It is axiomatic that “[a]nticipation requires the disclosure in a single prior art reference of each element of the claim under consideration.” *W. L. Gore & Associates, Inc. v. Garlock, Inc.*, 721 F.2d 1540, 1554, 220 USPQ 303, 313 (Fed. Cir. 1983). Therefore, every claimed feature of the claimed invention must be represented in the applied reference to constitute a proper rejection under 35 U.S.C. § 102.

Claims 1-13 stand rejected under 35 U.S.C. §102(e) as allegedly being anticipated by the instant application’s disclosed prior art. For at least the reasons set forth below, Applicants traverse these rejections.

### **A. Claims 1-12**

As an initial matter, Applicants note that in the Response to Arguments section, the Office Action characterizes the claimed invention as data being input to a CO operator whereby a PSD (power spectral density) mask is generated. (Office Action, page 2). Applicants respectfully disagree with the Examiner’s characterization as claims 1-12 are not directed to generating a series of PSD masks. As reflected in the clarifying amendments set forth above, the claims are directed to a CO operator that shapes the spectrum transmission based on various PSD masks. Applicants maintain that the claim language directed to the PSD masks in the various claims should be given patentable weight, as set forth below.

Applicants respectfully submit that independent claim 1 patently defines over the instant application’s disclosed prior art for at least the reason that the instant application’s disclosed prior art fails to disclose, teach, or suggest the features emphasized below in claim 1.

Claim 1, as amended, recites:

1. An asynchronous digital subscriber line (ADSL) system comprising:

a central office (CO) operator configured to perform spectrum management by controlling use of overlapped modes of operation, wherein the CO operator is further configured to provide a power spectral density (PSD) mask for spectral shaping of an ADSL overlap spectrum transmission over a plain old telephone system (POTS) mode of operation, wherein for CO deployment, the CO operator shapes the spectrum transmission based on the following PSD mask: -97.5  $\pm$  10% decibel-milliwatts per hertz (dBm/Hz) at 0  $\pm$  10% kilohertz (kHz); -97.5  $\pm$  10% dBm/Hz at 4  $\pm$  10% kHz; -92.5  $\pm$  10% dBm/Hz at 4  $\pm$  10% kHz; -36.5  $\pm$  10% dBm/Hz at 25  $\pm$  10% kHz; -36.5  $\pm$  10% dBm/Hz at 1104  $\pm$  10% kHz; -46.5  $\pm$  10% dBm/Hz at 2208  $\pm$  10% kHz; -101.5  $\pm$  10% dBm/Hz at 39.25  $\pm$  10% kHz; -101.5  $\pm$  10% dBm/Hz at 8500  $\pm$  10% kHz; -103.5  $\pm$  10% dBm/Hz at 8500  $\pm$  10% kHz; and -103.5  $\pm$  10% dBm/Hz at 11040  $\pm$  10% kHz.

(Emphasis added). In rejecting claims 1-13, the Office Action states the following:

*Regarding claims 1-13, page 2, lines 13-21 of the instant application's disclosed prior art describes an ADSL system and central office that performs spectral management under the requirements of Annexes A and C of the G.992.1 Recommendations (page 3, line 27 to page 4, line 20). The standards incorporated by reference in the instant application's disclosed prior art further describe this system. Page 4, lines 8-20 states the ADSL system will manage the power spectral density about the POTS frequency band. Break points are stored in the system to allow the management of the power density spectrum. Annex A of G.992.1 specifies a PSD mask for overlapped spectrum operation as well as a PSD mask for non-overlap spectrum (page 18, lines 19-23). This system can receive an input to generate any plurality of break points that are desired.*

Furthermore, the Office Action maintains that "Specific break points of a power density spectral mask are not components of an apparatus or system." (Office Action, pages

3-4). As emphasized in the prior response, Applicants submit that the breakpoints recited in claim 1 (and claims 2-12) serve as functional limitations to the CO operator

component recited in the claims. That is, the claim language directed to the PSD mask

is not a mere expression of an intended use, but a positive recitation that describes, in broad terms, a characteristic of the CO operator. The limitation is not immaterial to the structure or function of this component. As set forth in claim 1, the the CO operator shapes the spectrum transmission based on a particular PSD.

Applicants refer the Examiner to MPEP 2173.05(g), which states:

A functional limitation is an attempt to define something by what it does, rather than by what it is (e.g., as evidenced by its specific structure or specific ingredients). There is nothing inherently wrong with defining some part of an invention in functional terms. Functional language does not, in and of itself, render a claim improper. In re Swinehart, 439 F.2d 210, 169 USPQ 226 (CCPA 1971). **A functional limitation must be evaluated and considered, just like any other limitation of the claim,** for what it fairly conveys to a person of ordinary skill in the pertinent art in the context in which it is used.

...  
In a claim that was directed to a kit of component parts capable of being assembled, the Court held that limitations such as "members adapted to be positioned" and "portions . . . being resiliently dilatable whereby said housing may be slidably positioned" serve to precisely define present structural attributes of interrelated component parts of the claimed assembly. In re Venezia, 530 F.2d 956, 189 USPQ 149 (CCPA 1976).

(Emphasis added). Applicants have amended claim 1 to now recite: "wherein for CO deployment, the CO operator shapes the spectrum transmission according to the following PSD mask . . ." and respectfully submit that patentable weight should be given to the claim language directed to the defined PSD mask as this defines the CO operator. Even assuming, for the sake of argument, that the Examiner is correct in stating that Applicants' disclosed prior art discloses the recited structural limitations, such a finding does not mean that the prior art also discloses a CO operator that performs the specialized functions as recited in independent claim 1.

As the Examiner maintains that the ADSL system in claim 1 must be differentiated from the prior art on the basis of structural limitations, Applicants respectfully refer to the following patents recently issued by the USPTO. For instance, U.S. Patent No. 7,209,516, issued April 24, 2007, includes the following claim:

1. An ADSL system comprising:  
**an ADSL transceiver operable** to transmit and receive over a frequency spectrum,  
the frequency spectrum having a data transmission band from frequency  $F_{U0}$  to frequency  $F_{DE}$ , the data transmission band including a first section from frequency  $F_{U0}$  to frequency  $F_{UE}$  for transmitting upstream data and a second section from frequency  $F_{D0}$  frequency  $F_{DE}$  for transmitting downstream data, the first section having a first subsection from frequency  $F_{U0}$  to frequency  $F_{U1}$  and comprising a channels and a second subsection from frequency  $F_{U1}$  to frequency  $F_{UE}$ , wherein  $F_{U0} < F_{U1} < F_{UE} \leq F_{D0} < F_{DE}$ ; wherein the data transmission band has improved data transmission rates for both upstream data transmission and downstream data transmission, the data transmission in the first subsection has a first power, the data transmission in the second subsection has a second power lower than the first power, and the data transmission in the second section has a third power lower than the second power.

(Emphasis added). Applicants respectfully submit that ADSL systems are commonly known to include an ADSL transceiver of some type. It is thus likely that the functional language recited in claim 1 distinguishes this claim over the prior art. As set forth above, claim 1 of the '516 patent includes such language as: "the frequency spectrum having a data transmission band from frequency  $F_{U0}$  to frequency  $F_{DE}$ " and "the data transmission band including a first section from frequency  $F_{U0}$  to frequency  $F_{UE}$  for transmitting upstream data and a second section from frequency  $F_{D0}$  frequency  $F_{DE}$  for transmitting downstream data." In this regard, claim 1 of the '516 recites a series of frequency points, and yet, the subject matter in claim 1 was determined to be patentable.

As another example, Applicants refer to U.S. Patent No. 7,469,028, issued December 23, 2008. Claim 1 in the '028 patent recites:

1. A digital communication system using telephone lines, comprising:
  - an analog-to-digital converter that generates a time-domain digital signal comprising frames from an analog signal received through the telephone line in response to a sampling clock signal;
  - a converter that transforms the time-domain digital signal to frequency-domain digital signals;
  - a frequency equalizer that conducts a frequency equalization of the frequency-domain digital signals;
  - a selector that selects a digital signal of the frequency-equalized digital signals, wherein the selected digital signal has the highest signal-to-noise ratio (SNR) among the digital signals;
  - an operation block that receives the selected digital signal having the highest SNR from the selector, and generates a selected highest SNR digital signal set at a constant position by performing an operation every frame on a constellation value of the selected digital signal having the highest SNR and a coefficient corresponding to the constellation value of the selected digital signal having the highest SNR to set the selected digital signal having the highest SNR at the constant position, wherein the operation block modifies the coefficient to generate a modified coefficient corresponding to the constellation value of the selected digital signal having the highest SNR every frame; and
  - a loop circuit that receives from the operation block the selected highest SNR digital signal set at the constant position and conducts a PLL operation using the selected digital signal having the highest SNR set at the constant position as a reference signal to generate the sampling clock signal to be applied to the analog-to-digital converter.

(Applicants note that dependent claim 2 recites: "wherein the digital communication system is an ADSL system." ) As set forth above, claim 1 of the '028 patent includes such components as an analog-to-digital converter, a converter, a frequency equalizer, *etc.* Again, it is likely that the functional language recited in claim 1 distinguishes this claim over the prior art.

Finally, Applicants emphasize that none of the claims include the term "capable." Applicants respectfully submit that the Examiner's assertion that prior art ADSL systems are capable of being configured for any break points, including the break points recited in the claims, is not grounded in any factual basis supported by the art of record. In this regard, Applicants respectfully submit that the claim language in claims 1-12 is entitled to patentable weight. For at least this reason, Applicants respectfully submit that claim 1 defines over the prior art of record. Applicants note that the Examiner actually concedes that *"the PSD mask is different than the prior art."* (Office Action, page 2). As claims 2-12 have been similarly amended, Applicants respectfully submit that these claims are also patentable as the prior art of record fails to disclose the limitations recited in these claims.

## B. Claim 13

Applicants respectfully submit that independent claim 13 patentably defines over the instant application's disclosed prior art for at least the reason that the instant application's disclosed prior art fails to disclose, teach, or suggest the features emphasized below in claim 13.

Claim 13 recites:

13. An asynchronous digital subscriber line (ADSL) system comprising:  
a central office (CO) ADSL transceiver unit (ATU-C) for transmitting data to a remote ADSL transceiver unit (ATU-R);  
a CO operator for performing spectral shaping of ADSL spectrum transmission between the ATU-C and the ATU-R over one of: a plain old telephone system (POTS) and an integrated digital services network (ISDN), wherein the CO operator further performs spectral shaping based on whether an overlapping or non-overlapping spectrum is deployed; and  
a plurality of PSD masks utilized by the CO operator to

perform spectral shaping, wherein the CO operator selects one of the plurality of PSD masks based on mode of operation comprising one of: CO deployment and remote terminal deployment.

(Emphasis added). In rejecting claims 1-13 collectively, the Office Action fails to address each of the elements recited in claim 13. The Office Action generally states that *"lines 13-21 of the instant application's disclosed prior art describes an ADSL system and central office that performs spectral management under the requirements of Annexes A and C of the G.992.1 Recommendations."* (Office Action, page 3). Applicants respectfully submit that the prior art fails to disclose the limitation, "wherein the CO operator further performs spectral shaping based on whether an overlapping or non-overlapping spectrum is deployed." The claimed embodiment provides interoperability between both overlapped and non-overlapped spectrum implementations. The prior art of record fails to disclose this feature. At most, the Office Action states that *"Annex A of G.992.1 specifies a PSD mask for overlapped spectrum operation as well as a PSD mask for non-overlap spectrum (page 18, lines 19-23)."* (Emphasis added; Office Action, page 4). This, however, is not equivalent to a CO operator that performs spectral shaping based on whether an overlapping or non-overlapping spectrum is deployed.

As an independent basis for patentability, Applicants respectfully submit that the prior art of record also fails to disclose the limitation, "wherein the CO operator selects one of the plurality of PSD masks based on mode of operation comprising one of: CO deployment and remote terminal deployment." Furthermore, the Office Action fails to point out with particularity how the prior art of record discloses this feature. Based on



at least these reasons, Applicants respectfully submit that independent claim 13  
patently defines over application's disclosed prior art.

**CONCLUSION**

Applicants respectfully submit that all pending claims are in condition for allowance. Favorable reconsideration and allowance of the present application and all pending claims are hereby courteously requested. If, in the opinion of the Examiner, a telephone conference would expedite the examination of this matter, the Examiner is invited to call the undersigned attorney at (770) 933-9500.

No fee is believed to be due in connection with this amendment and response to Office Action. If, however, any fee is believed to be due, you are hereby authorized to charge any such fee to deposit account No. 50-0835.

Respectfully submitted,

/Jeffrey Hsu/

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**Jeffrey C. Hsu**  
**Reg. No. 63,063**

**THOMAS, KAYDEN, HORSTEMEYER  
& RISLEY, L.L.P.**  
600 Galleria Parkway S.E.  
Suite 1500  
Atlanta, Georgia 30339  
(770) 933-9500